WHAT IS CLAIMED IS:

1. A photovoltaic device for conversion of an incident wavelength of electromagnetic radiation to electricity, the photovoltaic device comprising:

an absorber of the incident wavelength of electromagnetic radiation;

a trimetasphere, the trimetasphere in electron transferring contact with the absorber;

an anode in electrical contact with the trimetasphere; and

a cathode in electrical contact with the absorber.

2. The photovoltaic device of claim 1, wherein the absorber and trimetasphere are a heterojunction.

3. The photovoltaic device of claim 1, wherein the absorber and trimetasphere are a blended junction

4. The photovoltaic device of claim 1, wherein the trimetasphere includes a carbon-cage structure with an interior volume, wherein the carbon-cage structure encapsulates one or more metal atoms or ions complexed with a non-carbon heteroatom or ion.

5. The photovoltaic device of claim 4, wherein the trimetasphere has a general formula $A_{3-n}X_nN@C_m$, wherein n ranges from 0 to 3, A and X are a trivalent metal, m is between about 60 and about 200, and N is the non-carbon heteroatom or ion.

6. The photovoltaic device of claim 5, wherein N is nitrogen.

7. The photovoltaic device of claim 5, wherein the trivalent metal is a rare earth metal or a group IIIB metal.

8. The photovoltaic device of claim 7, wherein A is selected from the group consisting of Scandium, Yttrium, Lanthanum, Cerium, Praseodymium, Neodymium, Gadolinium, Dysprosium, Holmium, Erbium, Thulium, and Ytterbium.

9. The photovoltaic device of claim 8, wherein A is selected from the group consisting of Erbium, Holmium, Scandium and Yttrium.

10. The photovoltaic device of claim 7, wherein X is selected from the group consisting of Scandium, Yttrium, Lanthanum, Cerium, Praseodymium, Neodymium, Gadolinium, Dysprosium, Holmium, Erbium, Thulium, and Ytterbium.

11. The photovoltaic device of claim 1, wherein the trimetasphere has a A^1, A^2, A^3 complexed structure where A^1, A^2, and A^3 are the same atoms or ions.

12. The photovoltaic device of claim 11, wherein the trimetasphere has a A^1, A^2, A^3 complexed structure including a heteroatom or ion.

13. An electrical circuit comprising:

an absorber of incident electromagnetic radiation;

a trimetasphere-containing material in electron transferring contact with the absorber;

an anode;

a cathode; and

a current path from the anode to the cathode.

14. The electrical circuit of claim 13, wherein the absorber and trimetasphere-containing material are a heterojunction.

15. The electrical circuit of claim 13, wherein the absorber and trimetasphere-containing material are a blended junction.

16. The electrical circuit of claim 13, wherein the anode is in electrical contact with the trimetasphere-containing material.

17. The electrical circuit of claim 13, wherein the cathode is in electrical contact with the absorber.

18. The electrical circuit of claim 13, wherein a trimetasphere in the trimetasphere-containing material includes a carbon-cage structure with an interior volume, wherein the carbon-cage structure encapsulates one or more metal atoms or ions complexed with a non-carbon heteroatom or ion.

19. The electrical circuit of claim 18, wherein the trimetasphere has a general formula $A_{3-n}X_nN@C_m$, wherein n ranges from 0 to 3, A and X are a trivalent metal, m is between about 60 and about 200, and N is the non-carbon heteroatom or ion.

20. The electrical circuit of claim 19, wherein N is nitrogen.

21. The electrical circuit of claim 19, wherein the trivalent metal is a rare earth metal or a group IIIB metal.

22. The electrical circuit of claim 21, wherein A is selected from the group consisting of Scandium, Yttrium, Lanthanum, Cerium, Praseodymium, Neodymium, Gadolinium, Dysprosium, Holmium, Erbium, Thulium, and Ytterbium.

23. The electrical circuit of claim 22, wherein A is selected from the group consisting of Erbium, Holmium, Scandium and Yttrium.

24. The electrical circuit of claim 21, wherein X is selected from the group consisting of Scandium, Yttrium, Lanthanum, Cerium, Praseodymium, Neodymium, Gadolinium, Dysprosium, Holmium, Erbium, Thulium, and Ytterbium.

25. The electrical circuit of claim 13, wherein a trimetasphere of the trimetasphere-containing material has a A^1, A^2, A^3 complexed structure where A^1, A^2, and A^3 are the same atoms or ions.

26. The electrical circuit of claim 25, wherein the trimetasphere has a A^1, A^2, A^3 complexed structure including a heteroatom or ion.

27. A method of converting incident electromagnetic radiation to an electrical signal, the method comprising:

absorbing the incident electromagnetic radiation by an absorber or a photoactive material to produce an electron-hole pair;

transferring an electron in a Lowest Unoccupied Molecular Orbital (LUMO) of the absorber or the photoactive material across a band gap to a trimetasphere-containing material;

injecting an electron from the trimetasphere-containing material into an anode

transferring a hole in a Highest Occupied Molecular Orbital (HOMO) of the absorber or the photoactive material to a cathode; and

completing a circuit between the anode and the cathode.

28. The method of claim 27, wherein the absorber and the trimetasphere-containing material are a heterojunction.

29. The method of claim 27, wherein the absorber and the trimetasphere-containing material are a blended junction.

30. The method of claim 27, wherein a trimetasphere in the trimetasphere-containing material includes a carbon-cage structure with an interior volume, wherein the carbon-cage structure encapsulates one or more metal atoms or ions complexed with a non-carbon heteroatom or ion.

31. The method of claim 30, wherein the trimetasphere has a general formula $A_{3-n}X_nN@C_m$, wherein n ranges from 0 to 3, A and X are a trivalent metal, m is between about 60 and about 200, and N is the non-carbon heteroatom or ion.

32. The method of claim 31, wherein N is nitrogen.

33. The method of claim 31, wherein the trivalent metal is a rare earth metal or a group IIIB metal.

34. The method of claim 33, wherein A is selected from the group consisting of Scandium, Yttrium, Lanthanum, Cerium, Praseodymium, Neodymium, Gadolinium, Dysprosium, Holmium, Erbium, Thulium, and Ytterbium.

35. The method of claim 34, wherein A is selected from the group consisting of Erbium, Holmium, Scandium and Yttrium.

36. The method of claim 33, wherein X is selected from the group consisting of Scandium, Yttrium, Lanthanum, Cerium, Praseodymium, Neodymium, Gadolinium, Dysprosium, Holmium, Erbium, Thulium, and Ytterbium.

37. The method of claim 27, wherein the incident electromagnetic radiation is a wavelength in a visible spectrum or an ultraviolet spectrum.

38. The method of claim 27, wherein a trimetasphere of the trimetasphere-containing material has a A^1, A^2, A^3 complexed structure where A^1, A^2, and A^3 are the same atoms or ions.

39. The method of claim 38, wherein the trimetasphere has a A^1, A^2, A^3 complexed structure including a heteroatom or ion.